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WILLIAM E. LOGAN

Life of Sir William E. Logan, LL.D., F.R.S., First Director of the Geological Survey of Canada. By B. J. Harrington, B.A., Ph.D. (London: Sampson Low and Co., 1883.)

CANADA claims the honour of being Logan's birthplace. During his lifetime she fully appreciated how much he had done for her, how unweariedly and generously he worked for her material interests, and that the renown he achieved cast a reflected glory upon herself. After his death it was but fitting that the story of his life should be written in Canada, where his best years were spent and where his main work was accomplished. And yet he was personally so familiar on this side of the Atlantic, so universally known and loved, so linked with early geological associations and with the fathers of geology in this country, that there may be readers of the volume before us who will be surprised to learn that he cannot strictly be claimed as one of the illustrious phalanx of geologists born within these islands. They may console themselves, if they choose, with the reflection that, though not actually ushered into life here, he came over in boyhood, received the closing part of his education at Edinburgh, began his geological career in Wales, and had already attained eminence as an original observer there before he was called upon to undertake the Geological Survey of his native province.

Logan was one of the most lovable of men. Simple and unsuspicious as a child, he was always at the service of any friend who needed his help, and too often also of strangers who preyed on his time and good nature. And yet with this gentle side of his character, there were combined a sturdy independence, an indomitable perseverance, an inexhaustible enthusiasm, which carried him up to and even beyond the limits of his physical strength. What infinite humour twinkled in those grey eyes, as he quietly told his reminiscences of camp-life, or of more civilised travel, or his experiences of politics and politicians with whom he had to fight for the existence of his Canadian Survey! How delicately and good-humouredly his satire played round these Philistines, who cost him withal many an anxious hour by day and many a sleepless hour by night! There was a calm self-possession in him, a consciousness of strength that could be put forth if needed though usually kept out of sight in the background, a determination to do his own duty and to see that others in the same matters did theirs.

Those who knew him and who recall these distinctive characteristics of him will be glad to have Dr. Harrington's memoir. The picture it gives of Logan's boyish years, told mainly in his own letters, is delightful. His overmastering affection for his family, his interest in everything at home, his eagerness to hear of and from each beloved one, his lengthy descriptions of all he thought likely to interest the home circle, are graphically told. It is not difficult to see how such a boy should have developed into such a man.

Born at Montreal in the year 1798 of Scottish parentage, Logan was sent at the age of sixteen to continue his education at the High School of Edinburgh, where he so greatly distinguished himself that a brilliant career at the University was open to him. But he determined to enter upon commercial pursuits at once, and accordingly in the year 1817 took a place in the counting-house of his uncle, Mr. Hart Logan, in London. There he remained for fourteen years, during which there seems to have been nothing in his pursuits to develop the strong scientific bent that so completely dominated his later life, though we find that in his leisure he read books of science, especially in mathematics and chemistry, and asked to be supplied with some good work on mineralogy and geology. It seems almost by accident that he became a man of science. In the year 1831 he left London to take up his residence in Swansea, in charge of the books of a mining company in which his uncle was interested. But besides the books, he soon was called on to attend to the working of the mines and the smelting of the copper. Here at last he found an outlet for his love of nature and desire for scientific inquiry. He could not be content with the mere routine of his duties. Providing himself with the necessary surveying instruments, he began a geological survey of the Glamorganshire coal-field. He traced out the outcrops of the seams and positions of the faults with such minute care, that when some years afterwards De la Beche extended the Geological Survey to that region he found Logan's map so good that he gladly adopted it when it was generously handed over to him by its author. Logan's name accordingly appears on the published sheets of the Geological Survey of Wales, together with those of the members of the staff by whom the rest of the ground was examined. It was while looking after his uncle's coal-mines in this region that he was led to make his well-known observations on the rootlet-beds below coal-seams and to settle thereby the vexed question of the origin of coal.

There had been various efforts to establish a Geological Survey in Canada, but these had successively failed until 1841, when a sum of 1500*l.* was placed on the Parliamentary estimates. Next year the arrangements were completed, and the task of organising and conducting the Survey was intrusted to Logan. From 1842 till he resigned in 1869 he continued to be the life and soul of the Canadian Survey. The task he undertook was truly a colossal one. Almost nothing was known of the geology of the country. There were no maps on which geological lines could be traced. Thousands of square miles were unexplored trackless forest. Logan had not merely to find out the geological structure, he had to construct the very topographical maps on which it was to be delineated. He had to work with his own hands and train his assistants to work with him. He had to live among the wilds for months at a time, traversing hundreds of miles in canoes and on foot, with Indian guides and helpers. When winter made the further prosecution of field-work impossible, there were all the results of the summer to tabulate and to keep him fully occupied till it was time to start again. But his time was not always uninterruptedly given to these congenial labours. Though the Survey started under favourable auspices and with the support of the Government of the day, there were not wanting economists in and out of the Legislature who failed to see the usefulness of the enterprise and who objected to the

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continuance of the annual grant for its prosecution. In nothing did Logan show his admirable tact and knowledge of men more than in the way he met these objectors, and turned them, if not into active friends, at least into passive though perhaps not wholly convinced spectators. Long before his death he had the satisfaction of seeing the establishment he had founded advanced in popular favour and equipped with a much more liberal endowment than he had been content with in its modest beginnings.

After the year 1851, when the reign of Universal Exhibitions began, Logan was frequently under the necessity of coming to Europe to look after the interests of Canada at the various capitals where the products of all nations were collected. There can be no doubt that though, so far as his proper scientific researches were concerned, these summers were entirely wasted, they were of the utmost service to the province. The collections of the Canadian Geological Survey were always one of the most interesting features in the Colonial galleries, and there can be no doubt that they did much to make the resources of the country widely known all over the world.

Of the value of Logan's services to science in general and to Canadian geology in particular, the best evidence and monument are to be seen in the voluminous series of Reports which he published, and in the truly admirable museum of Canadian minerals, rocks, and fossils which, with the aid of his colleagues, he formed at Montreal. As many of his letters show, he possessed no little literary faculty, but he never cultivated it, and indeed he hated the drudgery of writing. Had he been ambitious of fame, he might have attained a far wider reputation. His long years of exploration, his adventures and experiences by mountain, river, and forest, his felicitous power of rapid sketching, would have furnished him with ample materials for successive important and deeply interesting volumes, while his unflinching regard for truth and entire abhorrence of exaggeration would have lent to his pages a peculiar charm. But his ambition was to be at work in the field. There he continued at his post until after he had passed his seventieth year, when the confederation of the provinces extended the sphere of the operations of the Survey across the entire continent. Feeling himself no longer equal to the increased duties of his office, he resigned his connection with the Survey in the beginning of 1869, intending to devote himself more particularly to the investigation of some geological questions in which he took special interest, and to see more of his friends in Europe and of European geology than had previously been in his power. But he did not long enjoy the leisure he had so well earned. Retiring to Wales, where his sister lived, he spent there the autumn of 1874, but before the end of winter began to be seriously ill. He lingered until summer, and died on June 22, 1875.

The narrative of Logan's life by Dr. Harrington is simply and effectively given, much of its interest being derived from the extracts from the journals and letters. A few sketches are reproduced from the note-books. The only fault we are inclined to find with the book is that so few of these sketches have been given. We remember many a long year ago being allowed to peruse some of the note-books, and laughing heartily over the humorous delineations of camp life on the Canadian rivers. Those who knew Logan will be glad to have this pleasant souvenir of him. Those who never knew him may learn from it something of the charm that will keep his memory green in the affections of many friends, both in the Old World and in the New.

ARCH. GEIKIE

OUR BOOK SHELF

The Sea Fisheries of Great Britain and Ireland. By E. W. Holdsworth. (London: Stanford, 1883.)

NOTWITHSTANDING the extensive literary productions connected with the Fisheries Exhibition itself, many works, suggested by it, have already appeared. One such is the volume before us—an admirable digest of the question in hand. In the present state of our knowledge, the chapter devoted to Ireland is exceedingly welcome, and it may not be too much to hope that, in spite of the gradual decline of its fishing industry, that country may yet seize hold of this, at least one remaining hope. The book is written in excellent style, clear and concise, well balanced, and up to date; of convenient size to be carried in the pocket, and provided with a good index, we can strongly recommend it to the host of visitors who frequent our coasts, and so often find their way instinctively to the nearest fishing village. One prominent feature is the description of the various "rigs," a subject of great importance of late, but which does not appear to have been sufficiently dealt with in the Fisheries manuals. The universal outcry of want of statistics is raised, and the writer has made the best of such as he has gathered—largely, from private sources. Those relating to the gradual increase of larger and improved boats in our fishing fleets are interesting, as leading up, we may hope, notwithstanding acknowledged difficulties in the way, to the introduction of steam-power. The illustrations are good, but additional ones, setting forth the different "rigs," and doing justice to other nets, as does that given to the beam-trawl, would be acceptable.

Agricultural Chemical Analysis. By Percy Faraday Frankland. (London: Macmillan and Co., 1883.)

DR. PERCY FRANKLAND has done excellent service by the publication of his book. There is good reason to believe that practical agriculturists are rapidly becoming alive to the importance of a knowledge of the scientific principles which underlie their art, and the action of the Science and Art Department in fostering the study of those principles is calculated to increase the intelligent appreciation of their value. The relations of chemistry to agriculture have been indicated in times past in this country in the writings and teaching of such men as Davy, Johnstone, Ure, and others, and in more recent times in the elaborate reports which we owe to the patient industry and zeal of Sir J. B. Lawes and Dr. Gilbert. Nevertheless it is to be feared that these works have been practically sealed books to the great majority of even the more enlightened of our agriculturists. Farmers are proverbially, and perhaps not unnaturally, a conservative class, and apparently nothing but the pressure of competition will force them from the beaten track. But science is abroad even in Arcady. Farmers who buy feeding-stuffs and artificial manures soon show a very rational appreciation of the significance and value of such items as "albuminoids," "soluble phosphates," and "available nitrogen." They will find all about such matters, together with much else relating to the chemistry of their art, in Dr. Percy Frankland's excellent little work.

T. E. T.

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